

REMARKS

With the addition of claims 47 to 52, claims 22 to 52 are pending in the above-identified application.

Applicant respectfully requests reconsideration of the present application in view of this amendment.

Applicant thanks the Examiner for indicating that claims 22 to 33, 45, and 46 are allowed.

Applicant notes that the Office Action Summary still does not acknowledge the claim for foreign priority and does not indicate whether the priority document has been received.

Applicants note, however, that the Notification of Acceptance of Application Under 35 U.S.C. § 371 and 37 C.F.R. § 1.494 or 1.495 mailed on December 13, 2001 indicates receipt of the priority document. Applicant respectfully requests that the Examiner acknowledge the claim for foreign priority and acknowledge receipt of the priority document.

With respect to claims 33 to 44 being rejected as non-enabling under the first paragraph of 35 U.S.C. § 112, the rejections are not understood. In any event, the specification plainly provides that the electrode lead of the electrochemical sensor of claims 33 to 44 may include a material having a low resistance in comparison with a material of the at least one electrode, so that a resistance of the electrode lead is less than a resistance of the electrode. In this regard, the present application provides, for example, that:

A further exemplary embodiment of a broadband probe (Figure 2) is that to reduce the drop in pump voltage in the lead region, external pump electrode lead 41 features a material having a low resistance in comparison with the material of external pump electrode 40. This is achieved in that the proportion of electrically conductive material, e.g. platinum, is higher in the cermet material of external pump electrode lead 41 than in external pump electrode 40.

(Specification, page 6, lines 1 to 5). Hence, the material of the electrode lead of the electrochemical sensor of claims 33 to 44 may be exemplified by a cermet material having a metallic component (e.g., platinum) whose proportion with respect to the ceramic component

is greater than a metallic/ceramic proportion of the corresponding electrode cermet material. It is therefore respectfully submitted that the subject matter of the claims is described in the Specification so as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the claimed subject matter.

It appears that the Examiner may base this rejection on an alleged assessment of technical incompatability, rather than enablement. In particular, the Examiner suggests that a lower resistance in the lead as compared to the electrode would lower the internal resistance of the solid electrolyte and therefore be “antithetical to the key of the invention”. (See Office Action, p.2). However, it is respectfully submitted that claims 33 to 44 and supporting specification disclose that the internal resistance of the solid electrolyte in the vicinity of the leads is dependent upon the ionic conductivity **between the leads** which is dependent upon the makeup of the ceramic component of the cermet material (See for example, the paragraph beginning on page 5, line 9, of the Specification which discloses using 7% by volume Al₂O₃ as the ceramic material), whereas the electrical resistance **of the lead relative to the electrode** is dependent upon the makeup of the electrically conductive component of the cermet material (See for example, the above cited excerpt of the Specification in which the proportion of platinum is adjusted to be higher in the lead than in the electrode). In this regard, it is respectfully submitted that using a material having a lower resistance as compared to the material of the electrode is not antithetical to invention. Indeed, the Specification explicitly states that:

An additional advantage results from designing the external pump electrode lead and/or the internal pump electrode lead using a material having a low resistance in comparison with the material of the electrode in question. As a result, the drop in the pump voltage in the external pump electrode lead and/or internal pump electrode is reduced, thereby improving pump function.

(Specification, page 3, lines 16 to 20).

Regardless of whether the claims are “antithetical”, it is respectfully submitted that the Office Action’s assertions and arguments presented simply do not reflect the standard for determining whether a patent application complies with the enablement requirement that the

specification describe how to make and use the invention -- which is defined by the claims. (See M.P.E.P. § 2164). The Supreme Court established the appropriate standard as whether any experimentation for practicing the invention was undue or unreasonable. (See M.P.E.P. § 2164.01 (citing Mineral Separation v. Hyde, 242 U.S. 261, 270 (1916); In re Wands, 858 F.2d. 731, 737, 8 U.S.P.Q.2d 1400, 1404 (Fed Cir. 1988))). Thus, the enablement test is “whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation.” (See id. (citing United States v. Teletronics, Inc., 857 F.2d 778, 785, 8 U.S.P.Q.2d 1217, 1223 (Fed. Cir. 1988))).

The Federal Circuit has made clear that there are many factors to be considered in determining whether a specification satisfies the enablement requirement, and that these factors include but are not limited to the following: the breadth of the claims; the nature of the invention; the state of the prior art; the level of ordinary skill; the level of predictability in the art; the amount of direction provided by the inventor; the existence of working examples; and the quantity of experimentation needed to make or use the invention based on the disclosure. (See id. (citing In re Wands, 858 F.2d at 737, 8 U.S.P.Q.2d at 1404 and 1407)). In this regard, the Federal Circuit has also stated that it is “improper to conclude that a disclosure is not enabling based on an analysis of only one of the above factors,” and that the examiner’s analysis must therefore “consider all the evidence related to each of these factors” so that any nonenablement conclusion “must be based on the evidence as a whole.” (See M.P.E.P. § 2164.01).

Also, an examiner bears the initial burden of establishing why the “scope of protection provided by a claim is not adequately enabled by the disclosure.” (See id. (citing In re Wright, 999 F.2d 1557, 1562, 27 U.S.P.Q.2d 1510, 1513 (Fed. Cir. 1993))). Accordingly, a specification that teaches the manner and process of making and using an invention in terms that correspond in scope to those used in describing and defining the claimed subject matter complies with the enablement requirement. (See id.).

In contrast to the above, however, it is respectfully submitted that the Office Action’s unsupported assertions do not adequately concern – as they must under the law -- whether the present application enables a person having ordinary skill in the art to practice the claimed

subject matter of the claims without undue experimentation -- which it plainly does, as evidenced, for example, by the above reference to the present application. In short, the Office Action's assertions are merely conclusory and do not address the issue of whether one having ordinary skill would have to unduly experiment to practice the claimed subject matter of the rejected claims -- a proposition for which the Office bears the burden of proving a prima facie case as to the rejected claims.

In this regard, to properly establish enablement or non-enablement, the Office must make use of proper evidence, sound scientific reasoning and the established law. In the case of Ex Parte Reese, 40 U.S.P.Q.2d 1221 (Bd. Pat. App. & Int. 1996), a patent examiner rejected (under the first paragraph of section 112) application claims because they were based on an assertedly non-enabling disclosure, and was promptly reversed because the rejection was based only on the examiner's subjective belief that the specification was not enabling as to the claims. In particular, the examiner's subjective belief was simply not supported by any "evidence or sound scientific reasoning" and therefore ignored recent case law -- which makes plain that an examiner (and not an applicant) bears the burden of persuasion on an enablement rejection.

More particularly, the examiner in Ex parte Reese was reversed because the rejection had only been based on a conclusory statement that the specification did not contain a sufficiently explicit disclosure to enable a person to practice the claimed invention without exercising undue experimentation -- which the Board found to be merely a conclusory statement that only reflected the subjective and unsupported beliefs of a particular examiner and that was not supported by any proper evidence, facts or scientific reasoning. (See id.). Moreover, the Board made clear that it is "incumbent upon the Patent Office . . . to back up assertions of its own with acceptable evidence," and also made clear that "[where an] examiner's 'Response to Argument' is not supported by evidence, facts or sound scientific reasoning, [then an] examiner has not established a *prima facie* case of lack of enablement under 35 U.S.C. § 112, first paragraph." (See id. at 1222 & 1223; italics in original). In the present case, the Office Action has not even alleged in a conclusory way that undue experimentation would be required. Moreover, even as to the assertions as presented, the present application plainly discloses how to use the subject matter of the rejected claims, as

explained above.

In view of the foregoing, it is believed and respectfully submitted that the Office Action's assertions to support the rejections of the claims do not satisfy the judicial standards discussed above with respect to the enablement since the arguments and assertions presented do not relate the scope of the claims to the specification to determine whether the specification is enabling, nor do they properly address the enablement factors. It is therefore respectfully submitted that the Office Action has not even established a *prima facie* case as to the enablement requirement.

It is therefore respectfully requested that the enablement rejections be withdrawn for the above reasons.

Claims 33, 34, 36, 39, and 43 stand rejected under 35 U.S.C. § 102(b) as anticipated by Kato et al., United States Patent No. 4,668,375 (the "Kato reference").

The Kato reference purportedly relates to an improvement of an electric connection terminal for a sensor element, in which the connection terminal is made from at least two layers laminated on the sensor substrate. Because the lowermost layer contains ceramics or glass, a bonding force between the connection terminal and the sensor substrate, consisting of mainly ceramics, is purportedly improved and therefore a peeling-off of the connection terminal from the sensor substrate due to repeated heated and cooling of the sensor element and/or friction of the contacting elements of the connector socket against the connection is purportedly prevented. Also, because the upper layers each have a metal content higher than the layer just below, the contact resistance between the connection terminal and the contacting element of the connector socket is purportedly decreased. (See Kato, Abstract; col. 2, lines 49 to 65; col. 8, lines 36 to 57).

As may be indicated in Figures 1 to 4 of the Kato reference, the connection terminal may be realized by applying one or more connection terminal layers directly on or next to electrode leads 13, 15, which extend distally from a measuring electrode 11 and a standard electrode 12 of the sensor element 1. (See Kato, Abstract, Figures 1 to 4 and related text). In one embodiment, connection terminal upper layers 18, 19, are applied directly on the left ends 16, 17 of the electrode leads 13, 15. In another embodiment, a portion of the left ends 16, 17 of the electrode leads 13, 15 directly beneath the connection terminal upper layers 18, 19 is

removed to accommodate connection terminal lower layers 31, 32 applied directly to the sensor substrate 2. (See Kato, col. 4, lines 43 to 47; col. 6, lines 14 to 26). As stated in Kato, the lamination of the connection terminal upper layers 18, 19 on the connection terminal lower layers 31, 32 “produce[s] another structure of the sensor element” and the “bonding force at the connection terminal can be improved greatly **without varying resistance values of the leads 13 [and] 15**”. (Kato, col. 6, lines 23 to 30). (emphasis added).

Accordingly, the Kato reference does not identically describe an electrode lead including a material having a low resistance in comparison with a material of the at least one electrode so that a resistance of the electrode lead is less than a resistance of the electrode, as recited in claims 33 or 44.

The Office Action puts forth two contradictory interpretations of what the Kato reference assertedly discloses regarding the relative metal content of the electrode and electrode lead. In particular, the Office Action first asserts that electrode has a higher metal content than lead, and then, in contradiction, subsequently asserts that the lead has a higher metal content than electrode. (See Office Action, pages 2 to 3). In this regard, the Office Action applies its own terminology to rename and reassign the elements of the Kato reference to suit an interpretation, rather than seeking actual support in the Kato reference.

For example, the Office Action asserts on pages 3 and 4 that “element 11 is an electrode” and then later asserts that “element 11 is a lead.” Likewise, on page 4, the Office Action asserts that “[element] 16 can be regarded as either part of the electrode or as part of the lead” when element 16 is explicitly and consistently referred to as an “end of the electrode lead” (See e.g., Kato, col. 3, line 46, col. 4, line 43, col. 5, line 10), or that “[e]lement 18 is lead” when element 18 is explicitly and consistently referred to as a “connection terminal upper layer” (See e.g., Kato, col. 3, line 46; col. 4, line 44; col. 5, lines 8, 15, 21, 44, and 67; col. 6, lines 22, 36, and 41), or that “element 31 is an electrode” when element 31 is explicitly and consistently referred to as a “connection terminal lower layer” (See e.g., Kato, col. 3, line 52, col. 6, lines 19, 27, 34, and 39).

While the Office Action may make these assertions, it is believed and respectfully submitted that any review of the Kato reference plainly reveals that a relative metal content of the electrode as compared to the electrode lead is not identically described (or even

suggested). Indeed, it is respectfully submitted that a relative metal content of the electrode as compared to the electrode lead is not discussed at all. Accordingly, the assertions made by the Office Action are without support in the Kato disclosure. To the extent that the Examiner maintains these unsupported assertions -- statements that are apparently within the personal knowledge of the Examiner, it is respectfully requested pursuant to 37 C.F.R. § 1.104(d)(2) that the Examiner should provide an affidavit and/or published information concerning these assertions. This is because the rejection is apparently based on assertions that draw on facts within the personal knowledge of the Examiner, since no real support has been provided for these otherwise conclusory assertions.

Accordingly, since the features of claims 33 and 44 are plainly not identically described -- as they must be for anticipation -- by Kato, it is respectfully submitted that these claims are not anticipated and therefore are allowable.

Claims 34, 36, 39 and 43 depend from claim 33, and are therefore allowable for at least the same reasons that claim 33 is allowable.

With regard to the rejection of claim 37 under 35 U.S.C. § 103(a) as unpatentable over Kato, it is respectfully submitted that the critical deficiencies of the Kato reference (as explained above) with respect to claim 33, from which claim 37 depends, have not been overcome. It is therefore respectfully submitted that claim 37 is allowable for at least the same reasons as claim 33.

Moreover, since the Kato reference merely indicates that "40 vol% of stabilized zirconia power, such as ZrO₂ added with 6 mol% of Y₂O₃, are added ... to produce the electrode **leads** 13-15" (See Kato, col. 5, lines 29 to 35)(emphasis added), whereas claim 37 recites "the ceramic component of the **electrode** contains 20% by volume ZrO₂ stabilized with Y₂O₃", the Kato reference and claim 37 are not directed to the same subject matter. Accordingly, it is respectfully submitted that claim 37 is allowable for this further reason.

As further regard the obviousness rejections of claim 37, to reject a claim as obvious under 35 U.S.C. § 103, the prior art must disclose or suggest each claim element and it must also provide a motivation or suggestion for modifying the elements in the manner contemplated by the claim. (See Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 934 (Fed. Cir. 1990), cert. denied, 111 S. Ct. 296 (1990); In re Bond, 910 F.2d 831, 834 (Fed.

Cir. 1990)). Thus, the "problem confronted by the inventor must be considered in determining whether it would have been obvious to combine the references in order to solve the problem." (See Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 679 (Fed. Cir. 1998)). It is respectfully submitted that the Office Action's "analysis" simply does not reflect the foregoing since it does not demonstrate that a ceramic component of the Kato electrode is disclosed as containing 20% by volume ZrO₂ stabilized with Y₂O₃ as recited in claim 37.

The cases of In re Fine, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988), and In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992), also make plain that a subjective "obvious to try" standard is not proper. In particular, the Court in the case of In re Fine stated that:

Instead, the Examiner relies on hindsight in reaching his obviousness determination. . . . **One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.**

In re Fine, 5 U.S.P.Q.2d at 1600 (citations omitted; emphasis added). Likewise, the Court in the case of In re Jones stated that:

Conspicuously missing from this record is any evidence, other than the PTO's speculation (if it be called evidence) that one of ordinary skill . . . would have been motivated to make the modifications . . . necessary to arrive at the claimed [invention].

In re Jones, 21 U.S.P.Q.2d at 1943 & 1944 (citations omitted). In short, there must be evidence of why a person having ordinary skill in the art would be motivated to modify a reference to provide the claimed subject matter of the claims.

It is therefore respectfully submitted that claim 37 rejected as obvious is allowable for the above reasons over the reference relied upon, and the obviousness rejections of claim 37 should therefore be withdrawn.

With regard to the rejection of claim 35 under 35 U.S.C. § 103(a) as unpatentable over Kato in view of Radford et al., United States Patent No. 3,843,400 ("the Radford reference") or Haecker et al., United State Patent No. 4,283,441 ("the Haecker reference"), it is respectfully submitted that even if it were proper to combine the references as suggested (which is not conceded), it is respectfully submitted that the secondary Radford and Haecker

references do not cure the critical deficiencies of the Kato reference (as explained above) with respect to claim 33, from which claim 35 ultimately depends. Indeed, the Office Action of February 14, 2003, merely uses the Radford and Haecker references to assert disclosure of incorporating 5% alumina to a stabilized zirconia and adding alumina to a cermet electrode composition. It is therefore respectfully submitted that claim 35 is allowable for the same reasons as claim 33, and therefore the obviousness rejections of claim 35 should be withdrawn.

With regard to the rejection of claim 38 under 35 U.S.C. § 103(a) as unpatentable over Kato in view of et al., United States Patent No. 5,315,604 (“the Friese ‘604 reference”), it is respectfully submitted that even if it were proper to combine the references as suggested (which is not conceded), the secondary Friese ‘604 reference does not cure the critical deficiencies of the Kato reference (as explained above) with respect to claim 33, from which claim 38 depends. Indeed, the Office Action merely uses the secondary references to assert disclosure of an electrode have a pore-forming agent. It is therefore respectfully submitted that claim 38 is allowable for the same reasons as claim 33. Accordingly, the rejections of claim 38 under 35 U.S.C. § 103(a) should be withdrawn.

With regard to the rejection of claims 41 and 42 under 35 U.S.C. § 103(a) as unpatentable over Kato in view of Iino et al., United States Patent No. 4,943,330 (“the Iino reference”) or Kojima et al., United States Patent No. 5,895,591 (“the Kojima reference”), it is respectfully submitted that even if it were proper to combine the references as suggested (which is not conceded), the secondary Iino and Kojima references do not cure the critical deficiencies of the Kato reference (as explained above) with respect to claim 33, from which claims 41 and 42 depend. Indeed, the Office Action merely uses the secondary references to assert disclosure of a heater in the same plane as an electrode. It is therefore respectfully submitted that claims 41 and 42 are allowable for the same reasons as claim 33. Accordingly, the rejections of claims 41 and 42 under 35 U.S.C. § 103(a) should be withdrawn.

With further respect to the references relied upon and in view of the foregoing discussion of what those references purport to show, it is respectfully submitted that the Office Action does not establish a prima facie obviousness case at least because there is no suggestion or motivation in the references relied upon to combine or modify them as

suggested by the Examiner. The case law and M.P.E.P. § 2143.01 make clear that a statement that combining or modifying the references would have been within the ordinary skill of the art at the time the claimed invention was made does not establish a prima facie obviousness case without supporting objective reasons to combine or modify the references.

New claims 47 to 52 do not add any new matter and are supported in the specification. New claims 47, 48 to 49, 50 to 52 respectively depend from allowed or allowable claims 22, 33, and 44, and are therefore allowable at least for the same reasons as their respective base claims.

In summary, it is respectfully submitted that all of claims 22 to 52 are allowable for the foregoing reasons.

CONCLUSION

In view of all of the above, it is believed that the objection and rejections have been obviated, and that claims 22 to 52 are allowable. It is therefore respectfully requested that the objection and rejections be withdrawn, and that the present application issue as early as possible.

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